

Update - Canine Influenza Virus (CIV) or 'Canine Flu'

New Jersey Department of Health, 2013

BACKGROUND: Canine influenza virus (CIV) was first recognized in racing greyhounds in Florida in January 2004 and has since been documented in 30 states, including New Jersey. This highly contagious virus causes a clinical syndrome in dogs that mimics 'kennel cough' and is thus frequently mistaken for infections caused by the Bordetella bronchiseptica/parainfluenza virus complex. Outbreaks of CIV have been confirmed in New Jersey boarding kennels and shelters, usually when facilities are at full capacity. It should be noted that there is no evidence that CIV can be transmitted from dogs to humans.

TRANSMISSION AND CLINICAL SIGNS: Dogs of any breed or age are susceptible to infection, although it is likely that some dogs that have recovered from infection retain some immunity to re-infection. CIV is most likely to spread in facilities where dogs are closely housed together and where there is a high turnover of dogs, such as shelters, boarding and training kennels, day care kennels, pet shops, dog shows and grooming parlors. Household pets not being boarded are at low risk. The virus is spread via respiratory secretions, contaminated objects (bowls, surfaces, etc.) and people (via contaminated clothes, shoes or hands) moving from infected dogs to uninfected dogs. The virus can remain viable on surfaces for up to 48 hours, on clothing for 24 hours, and on hands for 12 hours.

If the virus enters a kennel setting, virtually 100 percent of exposed dogs become infected and nearly 80 percent develop clinical signs. Although most dogs will have a milder form of CIV and recover without complications, some may develop severe pneumonia, which can be life-threatening.

In the milder disease, the most common clinical sign is a cough that persists for 10 to 21 days, despite therapy with antibiotics and cough suppressants. Most dogs have a soft, moist cough, while others have a dry cough similar to that induced by Bordetella bronchiseptica/parainfluenza virus ('kennel cough') infection. Many dogs have purulent nasal discharge and a low-grade fever, indicative of a secondary bacterial infection.

In the more serious form, some dogs will develop pneumonia with clinical signs of a high fever (104°F to 106°F) and increased respiratory rate and effort. Thoracic radiographs may show consolidation of lung lobes. Dogs with pneumonia often have a secondary bacterial infection and may require aggressive medical intervention. The fatality rate when dogs develop pneumonia has been between 1 - 5%.

INCUBATION/SHEDDING PERIOD: The incubation period is 2 - 5 days after exposure, before clinical signs appear in infected dogs. The highest amounts of viral shedding occur during this time; therefore, dogs are most contagious during the period when they are not exhibiting signs of disease. Virus shedding decreases dramatically during the first 4 days of illness, but continues for up to 10 days from the initial day of clinical signs. Approximately 25% percent of infected dogs will not display clinical signs and become silent shedders of the virus.

DIAGNOSIS: The best approach for diagnosis of CIV is collection of nasal swabs and serum samples. Veterinarians can collect nasal and pharyngeal swabs for submission to the New Jersey Department of Agriculture (NJDA), Animal Health Diagnostic Laboratory (AHDL) for PCR testing to detect the virus within 4 days of illness onset. Serology is the most accurate and reliable diagnostic test for CIV in dogs that have been ill for more than 7 days and for confirmation of CIV infection in cases where the PCR test is negative but the index of suspicion is high. Paired acute (sick for <7 days) and convalescent (10 to 14 days later) serum samples are preferred for diagnosis of recent active infection based on seroconversion.

Veterinarians can submit diagnostic specimens from suspect CIV cases to the AHDL for the following diagnostic testing (serology and PCR):

Test	AGID	HI	PCR
Purpose	Determination of Exposure	Seroconversion/titers	Detection of viral RNA
Samples	Serum	Serum	Swab: nasal, tracheal/ pharyngeal
Fee	\$6.00	\$15.00	\$35.00
Time	1 business day	2-4 business days	1-2 business days

The NJDA, AHDL specimen submission form and the fee schedule are available for use by veterinarians here: <http://nj.gov/agriculture/divisions/ah/prog/lab.html>. Please call the AHDL if you have any questions or need information on testing: (609) 406-6999.

Suspected or confirmed outbreaks of CIV should be reported to the local health department where the facility is located, which oversees the operation of animal facilities.

TREATMENT: Treatment for CIV is primarily supportive, including good nutrition, adequate ventilation, and reducing stress. Clinically ill animals should be monitored closely and seriously ill animals evaluated for pneumonia by auscultation and radiographs. Pneumonia in severely ill animals responds best to a combination of broad spectrum bactericidal antibiotics to combat secondary bacterial pneumonia, along with intravenous fluid therapy to maintain hydration. Most dogs recover within 2 -3 weeks.

PREVENTION: Disinfectants commonly used in animal facilities, such as quaternary ammonium compounds and bleach, will kill the CIV. All animal cages, floors, surfaces in contact with animals, food and water bowl, and other objects in contact with animals should be thoroughly cleaned and disinfected daily. Facility staff and veterinarians should institute infection control practices to avoid inadvertent spreading of the virus on contaminated clothing, shoes, and other fomites. Staff should wash their hands with soap and water before and after handling each dog; after coming into contact with urine, feces or other animal secretions; after cleaning cages; and upon arriving and before leaving the facility. There have been reports of spread from an infected facility to workers' household pets through contaminated fomites, such as shoes and clothing.

Because the virus is highly contagious, veterinarians, boarding facilities, shelters, pounds and pet stores should institute rigorous isolation protocols for all dogs showing signs of upper respiratory disease or 'kennel cough.' Sick dogs should be isolated from other dogs for a minimum of 14 days after the first day of clinical illness. All exposed dogs in a facility should also be quarantined for a minimum of 14 days from last exposure. If possible, quarantined dogs should be separated by a physical barrier and strict infection control (hand washing, change shoes/clothes, etc.) to prevent spread into or out of the quarantined area.

In May 2009, the U.S.D.A. approved the licensure of a CIV vaccine developed by Intervet/Schering Plough Animal health Corp. Although the vaccine may not prevent infection all together, it may reduce the severity and duration of clinical illness. In addition, the vaccine reduces the amount of virus shed and shortens the shedding interval; therefore vaccinated dogs that become infected develop less severe illness and are less likely to spread the virus to other dogs.

FOR MORE INFORMATION/REPORTS/CONSULTATIONS: Contact Dr. Colin Campbell or Dr. Faye Sorhage, NJDOH, IZDP via phone (609)-826-4872 or email: zoonoticrn@doh.state.nj.us .

Additional information is available on the American Veterinary Medical Association website: <https://www.avma.org/KB/Resources/FAQs/Pages/Control-of-Canine-Influenza-in-Dogs.aspx>